

NOTES ON THE GENUS LISSOTES, WITH DESCRIPTIONS OF NEW SPECIES.

(Pl. VIII. and IX.)

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This genus of stag-beetles is almost confined to Tasmania (a single species being known from Victoria and two from New Zealand), and in certain districts and seasons almost every old log will be found to cover some specimens of it. Almost all the species, as with most of its sub-family, are very variable in size, in the shape of the mandibles, and in the tibial dentition, so that it appears as if there are many more species than really exist; in consequence several forms of the same species have been described under different names, and in all probability mistakes in this respect will continue to be made, except, possibly even, by those who have large series under examination.

Except in the case of a few very distinct species, it appears unsafe to identify single specimens of the genus from the published figures and descriptions, or to describe such specimens as new. Long series of many species have convinced me that all, or most of them, have numerous varieties, that without intermediate forms appear to be distinct, but which by such intermediate forms can quite readily be recognised as varieties only.

The greatest variation occurs in the mandibles of the males. On some specimens they are twice as large as on others of the same species. A decrease in their size is often accompanied by a decrease in the number of cusps, or these become less pronounced. When clenched also the openings are smaller in proportion, owing to the mandibles being more solid. The head is generally

smaller, whilst the punctures, both on the head and prothorax, are usually larger and denser; approaching the female type. An increase in size of mandibles is often accompanied by an increase in the numbers or size of tibial teeth. The cusps often vary in number and size on the different sides of a specimen.

The labrum is subject to variation, especially as regards its median prominence; its apparent shape also is affected by the opening or closing of the mandibles, and it is frequently partly obscured by grease, dust, and mud. Its clothing and the clothing beneath it also frequently affect its appearance, so that whilst at first it appears to be a very satisfactory character, in reality it is of very little use for distinguishing species.

The hind angles of the prothorax appear to be subject to but slight variation within the limits of a species.

The mandibles of the females, although different to a slight extent, inter se, are so much alike that they are practically useless for purposes of identification.

Two curious specimens were before me. One (see figure 42) was an hermaphrodite specimen of *punctatus*, having the left side male and right female. The other was a variety of *curvicornis*, having seven legs, the extra one jutting out from the left front coxa. They have been sent for incorporation in the teratological collection of the British Museum.

I have to thank Messrs. Aug. Simson and H. J. Carter for allowing me to see all their specimens of the genus; but in particular Mr. Jas. A. Kershaw, who sent for examination not only those of the National Museum, but also those of the Howitt collection, and as Professor Westwood received several of his types from Dr. Howitt, these were particularly welcome.

LISSOTES CURVICORNIS, Boisd.

Var. *subtuberculatus*, Westw. *opacus*, Deyr.

The original description of *curvicornis* is quite useless, and Parry's remarks (1) are of little use to the

(1) Trans. Ent. Soc., 1870, p. 64.

general worker. He says, however, that Howitt sent to Westwood "specimens both male and female of *L. curvicornis*, Boisd., under the name of *L. cancroides*, Fab., Dr. Howitt stating in his letter that the insect sent as *L. cancroides* appeared to him to be identical with *L. curvicornis*, grounding his opinion on an insect he had seen in Count de Castelnau's collection. This view proves to be correct upon comparison of the type specimen with the insect sent to Prof. Westwood."

There is in the Howitt collection a male labelled "*Lissotes cancroides* Fab. Tasmania" (2), and as this presumably is identical with the species sent to Westwood, and stated by Parry to agree with the type of *curvicornis*, I regard it as *curvicornis*. In the same writing and the same collection is another specimen labelled "*Lissotes subtuberculatus* Westw. Hobarton." This also I believe to be correctly named (3), and if this is the case then *subtuberculatus* is a simple variety of *curvicornis*.

The species is a rather common one about Hobart and Mount Wellington, and as it varies considerably the specimens at first sight appear to belong to two or more species. The males may be regarded as belonging to the following races or varieties:—

1. *CURVICORNIS*, Boi (typical). (Figs. 1, 2, 3, 4.)

Rather flat; head and prothorax with a more or less distinct bluish or pruinose gloss. Cuspidate mass of mandibles subbasal, the mandibles when clenched enclosing a large apical space. A rounded, usually shining tubercle, half-way between each mandible and eye. Prothorax with small punctures; apex not subtuberculate in middle.

The female of this form is also rather depressed and its prothorax usually has a bluish gloss.

(2) Figure 1; a second and identical specimen in the same collection is also labelled *cancroides*, and from Victoria; but Victoria I believe to be in error.

(3) It agrees well with the descriptions; see figure 5.

2. Var. SUBTUBERCULATUS, Westw. (Figs. 5, 6, 7, 8.)

Narrower and less depressed than in 1, and the bluish or pruinose gloss almost or quite absent. Cuspidate mass of mandibles median, the mandibles when clenched leaving but a small apical space. Cephalic tubercles absent or very feeble. Prothorax with larger and denser punctures, the apex in middle feebly raised, so as to appear like two very feeble converging tubercles.

Females (as also those of 3) rather narrower than the females of 1, less polished, and with coarser punctures.

Some of the narrower specimens of this variety at first appear to belong to *Launcestoni*, but may be at once distinguished by the elytral clothing.

3. N. var. (Figs. 9, 10, 11.)

Like 2; but prothorax not subtuberculate at apex.

4. N. Var. (Fig. 8 would do for one of the males of this variety.)

Like 3, but each shoulder with a conspicuous spot of golden clothing on both sexes.

This variety I have only seen from the Gordon River (J. E. Philp) and Zeelhan (Aug. Simson).

All these forms differ more or less in the cusps of the mandibles, which are frequently different on the different sides of an individual. They all, however, have the elytra more densely clothed and with longer hairs than on any other species before me, and the clothing on each elytron is usually in five or six rows, although the linear arrangement is not very apparent from above. On one of the National Museum specimens of the first variety, and one of Mr. Simson's of the second, there are two distinct foveæ on the prothorax. The prothorax is rather strongly notched on each side of the base. The distinct teeth on the front tibiæ vary in number from four to nine, but are usually six. The length, including mandibles, varies from 14 to 19 mm. The swollen portion of each mandible usually has four or five cusps, and above these is a strong tubercle.

In Masters' Catalogue *opacus* was ascribed to Parry. It was certainly included in a paper by Parry, but in that paper it was ascribed to Deyrolle, and given between quotation marks, Deyrolle evidently having sent its description (with that of several other species) for inclusion in the paper. It is simply a comparison with *obtusatus*, and in it there is absolutely nothing to distinguish it from *curvicornis*, as above regarded. The "two little shining tubercles on the forehead" at first appear to be distinctive, but most of the specimens of *curvicornis* have two feeble swellings on the middle of the forehead, and these are sometimes rather more prominent and shining than usual, so that they might quite fairly be regarded as small tubercles.

I think it is extremely probable that the type of *cancroides* is really a form of *curvicornis* (1), but that could only be determined on comparison with the type.

LISSOTES CANCROIDES, Fabr.

I have seen this name attached to several totally different species, but not one of the more than 500 specimens of the genus before me agrees with Westwood's remarks (2) on the type, and in particular "the prothorax—the anterior margin—with a small simple (not bipartite) raised tubercle in the middle, close to the fore-margin"; and again, "prothorax with a small central frontal polished tubercle." Parry also (3) comments on the tubercle. Westwood and Parry only knew the type, and whilst it seems probable that it is really an aberrant specimen of *curvicornis*, it possibly enough represents an extremely rare species, or one confined to a small area, as several undoubtedly distinct species are.

LISSOTES LATIDENS, Westw. (Fig. 12.)

This name has also been attached to several species, but the only specimen I have seen that agrees with the original description and figure is one belonging to the

(1) If so it will as the older name take precedence.

(2) Trans. Ent. Soc., London, 1871, pp. 371-373.

(3) L.C., 1870, p. 65.

Howitt collection, and bearing a green number label "1358," and a blue label "Dorcus near cancrivorus," but without a locality label. Westwood, however, received the type from the late Dr. Howitt, and gave the locality as Maria Island, and the east coast of Tasmania.

LISSOTES OBTUSATUS, Westw. (Figs. 13, 14,
15, 57.)

A rather solidly-built species, more widely distributed in Tasmania than any other. There are specimens before me from Hobart, Mount Wellington, Ben Lomond (4,000 feet), Mole Creek, Great Lake, Huon River, Parattah, etc. One (Fig. 13) bears the Rev. T. Blackburn's label obtusatus, and two others from the Howitt collection are so named (one of them, however, probably in error, is labelled as from New South Wales.)

The males vary in length from 13 to 19 mm. When clenched their mandibles usually leave two openings—a small one at the apex, and a somewhat larger one at the base; but the apical one appears to be frequently absent.

LISSOTES LAUNCESTONI, Westw. (Figs. 16, 17,
18, 19, 20, 21, 22.)

Commented on by both Westwood and Parry as close to obtusatus. Parry remarks (1):—"It is the opinion of certain entomologists that this may ultimately prove to be a mere local form of *L. obtusatus*." The differences pointed out by Westwood, however, appear to be constant, but the two species, or races, may usually be readily distinguished by the mandibles; when agape in *Launcestoni*, each is seen to have a strong conical projection near the base, and even when clenched the projections are visible. In *obtusatus* each mandible is there usually more or less evenly rounded off (2), but there are several intermediate forms before me. But even if *Launcestoni* is to be regarded as a variety, it is one well deserving of a name.

(1) Trans. Ent. Soc., 1870, p. 97.

(2) Compare figures 16 (*Launcestoni*) and 15 (*Obtusatus*).

One of the specimens before me bears a label of Mr. Blackburn's, "Seems identical with a *Lissotus* I am describing as new (1), mandibles a little different, but that is a very frequent occurrence in *Lissotus*." Another bears his label 'forcipula.' These two specimens differ considerably in size, in shape of the mandibles, and punctures of the prothorax, but I am convinced that they are simply forms of *Launcestoni*."

The female, unknown to Westwood, differs in being smaller and rather more depressed, prothorax more rounded in front, with median line more conspicuous, punctures coarse, denser, and more uniform, head much smaller, with coarser and denser punctures and the mandibles of the usual female form.

Hab.—Wynyard, St. Patrick's River, East and West Tamar, Strahan, Launceston, Beaconsfield, Mole Creek, Zeehan, Frankford, Ulverstone, Burnie.

LISSOTES MENALCAS. Westw. (Figs. 23, 24, 25, 26.)

Readily distinguished from all other species by its high polish, peculiarly shaped prothorax, and largely excavated head. Each mandible has two apical cusps, and a strong sub-conical tubercle on the upper surface rather close to the apex. When clenched the enclosed space is large and single. The labrum is sometimes feebly notched at its apex, but is generally obtusely triangular, and is sometimes slightly upcurved at its tip. The distinct teeth on the front tibiæ vary in number from six to nine, but are usually seven. The length varies from 16 to 24 mm.

It is perhaps the most distinct species of the genus, but is rare in collections. I have seen several other species labelled *menalcas*, but although in some respects they agreed with the original figure, they were all without the high polish characteristic of this species, and which at first sight causes the males to appear as if coated with black enamel.

The female, unknown to Westwood, is also highly polished, but the polish is less conspicuous owing to the punctures being much denser and larger, especially on the head and prothorax. The prothorax is smaller and less convex, with the median line wider and deeper, and the

(1) Mr. Blackburn evidently abandoned his intention of describing species of *Lissotes*.

middle of the apex scarcely bilobed. The head is much smaller, the labrum apparently always notched, and the surface immediately behind the labrum raised into a sub-conical but obtuse tubercle. The mandibles are of the usual female type.

The species was recorded by Westwood from New Holland, and as possibly from New Zealand, but is probably confined to Tasmania. The specimens before me are from Long Bay, Three Hut Point, and Mount Wellington.

LISSOTES FORCIPULA, Westw. (Figs. 27, 28, 29,
30, 31.)

Ten males, all from about Hobart, appear to belong to this species; they vary in length from $9\frac{1}{2}$ to $12\frac{1}{2}$ mm (1). The teeth of the front tibiae vary in number from three to five, and are usually four (on the type there were five). The mandibles usually sweep round as in the original figure, but the tips are not exactly alike on any two specimens. On some very small ones the enclosed space is considerably smaller in proportion than on the larger ones. Westwood makes no mention of clothing, but on the figure the sides are drawn as setose. On all the specimens before me each elytron has fairly long hairs in five rows, and with some much shorter hairs, also in rows; but they appear to be all rather easily abraded, and the linear arrangement is not at once apparent.

Two other males (Fig. 31) differ from the more typical specimens in having the mandibles terminated by two simple cusps, with the inner apical portion narrow and simple.

LISSOTES SUBCRENATUS, Westw.

Only the female of this species was described by Westwood, and until the male has been described after a careful comparison with the type itself, it seems very undesirable to identify any species as subcrenatus. It is to be

(1) The type was described as six lines in length, but the indicator at the side of the figure is nearly seven lines.

regretted that Westwood's original intention (1) not to describe the species until the male was known was not adhered to.

LISSOTES FURCICORNIS, Westw. (Figs. 32, 33.)

Readily distinguished from all other species by the peculiar mandibles and strong cephalic tubercles; the latter, however, are much less conspicuous on small specimens than on large ones. The length, including the mandibles, varies from 12 to 20 mm.

It appears to be confined to Victoria, and is the only ex-Tasmanian species known to me.

LISSOTES RUDIS, n. sp. (Figs. 34, 35, 36, 37, 58.)

Male, Black; sides setose.

Head wide; a strong projection behind each eye and a less distinct one in front; front somewhat obliquely and feebly flattened; with large round punctures, dense at the base and sides, and becoming sparser and smaller elsewhere, and almost absent from the middle of the front. Labrum rather feebly pointed. Mandibles moderately stout, about as long as head or somewhat longer, strongly concave at inner base; with a strong projection near base, upper surface with a strong projection at middle, lower surface between this and apex with a bi or tri cuspidate mass. Prothorax very little, or not at all, wider than widest part of head, sides finely serrated and gently rounded, towards base somewhat oblique but not notched; apex widely rounded in middle, somewhat flattened or feebly depressed along middle, on each side of which the punctures are smaller and sparser than elsewhere, where they are dense and rather coarse. Elytra with shoulders slightly projecting laterally; densely and coarsely punctate; striæ and interstices very feebly defined. Length, excluding mandibles, $12\frac{1}{2}$ —20 (female 12—15) mm.

(1) Trans. Ent. Soc., 1870, p. 98.

Female differs in having the head much smaller, its sides not projecting behind eyes, punctures much denser and more evenly distributed; mandibles very acute at tip, and each with a single acute submedian tooth; prothorax no wider than elytra, sides more rounded and with somewhat denser and more uniform punctures, and elytra with rather smaller punctures.

Hab.—Tasmania: George's Bay, Forester River, Denison Gorge, Lottah (Aug. Simson), Sheffield (H. J. Carter from H. H. D. Griffith), Frankford, Wilmot, Ulverstone (A. M. Lea).

One of the specimens (Fig. 34) before me bears the Rev. T. Blackburn's label, "*Lissotus menalcas* Westw.," and on this authority I previously distributed under that name many specimens of the species; but it is not even close to *menalcas*, being subopaque, the average size smaller, mandibles different both from above and from the sides, head not largely scooped out in front, prothorax much less convex, with sides very different, etc.

A subopaque rough species, of which specimens are usually above the average size of the genus. Some of the smaller males have the head not much larger than those of the females, with the mandibles considerably reduced in size. When the mandibles are clenched the strong basal projections, which vary considerably, almost meet considerably in advance of the labrum. The cusps towards the apex are nearly always two or three in number, but are sometimes very feebly defined. The smooth spaces on each side of the middle of the prothorax are more distinct on some specimens than on others, but are never as distinct as in the two following species. The front tibiae have two very strong apical teeth, and usually three or four other fairly strong ones, and there are generally a few smaller ones, some of which are often inserted between the fairly strong ones. The elytra are usually glabrous except at the sides, but on an occasional specimen a few short hairs are scattered about its surface, and more or less linear in arrangement.

In this and the following species I have not described the punctures of the under surface, as they are invariably coarse or fine according as to whether they are coarse or fine on the upper surface. The large punctures on this

species (also with other species of the genus) are often filled with mud, so that, to the naked eye, specimens often appear of a dingy brown.

LISSOTES CONVEXUS, n. sp. (Fig. 38).

Male, Black, shining; sides setose.

Head wide; eyes nearer the base than usual, the sides behind them not projecting and no wider than, if as wide as, the space across the eyes themselves; sides in front of eyes narrow and flattened, but not projecting. Rather convex, apex in middle almost vertical and feebly concave, with large, round, dense punctures at the sides, becoming much smaller and sparser elsewhere, and in some parts entirely absent. Labrum moderately long and pointed in middle. Mandibles comparatively slender, each with a large obtuse projection at side of labrum, upper surface from middle to apical fourth with an obtuse ridge, ending in an obtuse projection, lower surface between this and apex usually with a strong cusp and a very feeble one. Prothorax slightly wider than head, sides finely serrated and gently rounded, towards base slightly incurved, but with the hind angles almost rectangular, flattened or very feebly depressed along middle; with punctures varying from very minute to very large, and irregularly distributed, a conspicuous smooth space with very sparse and minute punctures along each side of the middle. Elytra with feebly projecting shoulders, with dense but not very coarse punctures, of which two or more are frequently connected by fine transverse or oblique scratches; interstices and striation ill defined. Length, 13—16 (female, 11½—12½) mm.

Female differs in having the head much smaller, with denser punctures of more uniform size, eyes more conspicuous, mandibles of the usual female type; prothorax smaller, sides more rounded and more strongly serrated, with the shining spaces much less conspicuous, and elytra with somewhat sparser punctures.

Hab.—Tasmania: Burnie, Marrawah (A. M. Lea).

There are five males before me and two females, and I have described them as representing a distinct species. But possibly they represent an extreme variety of the

preceding species. They differ from it, however, in being more convex (both sexes), the males with the projection at the inner base of each mandible larger and more obtuse, the tips somewhat different, the distance across the eyes actually the widest part of the head, instead of with projecting lobes in front of and behind same. They also are quite black and shining, although without the enamelled appearance of *menalcas*, so that altogether their general appearance is strikingly different. The female differs from the female of that species in the head having somewhat sparser punctures, eyes more prominent, each mandible with its tooth rather nearer the apex, and not quite so acute, prothorax slightly longer in proportion, and elytra with somewhat sparser punctures.

Each mandible could scarcely be regarded as having a cuspidate mass, as the subapical cusp is the only distinct one, and this is so close to the apex that the apex itself appears bicuspidate or notched. Some of the punctures on the front of the prothorax, but not in the middle, are larger than any on the head. There are usually six strong teeth on the front tibiae.

LISSOTES PUNCTATUS, n. sp. (Figs. 39, 40, 41, 42,
43, 44, 45, 46).

Male, Black, subopaque; sides setose.

Head wide, moderately convex, scarcely or not at all concave in middle of apex; sides slightly projecting behind eyes, and feebly or not at all in front of same. With dense, large, round punctures at sides, becoming smaller and sparser elsewhere, and sometimes absent from certain parts. Labrum strongly but obtusely produced in middle. Mandibles usually rather slender, each with a strong projection close to labrum; upper surface with two projections beyond the middle, lower usually with a strong cusp near apex, and a very small one behind it. Prothorax slightly wider than head, sides feebly serrated and gently rounded, becoming oblique or very feebly incurved towards base; apex feebly rounded in middle; flattened or very feebly depressed along middle; with dense coarse and irregularly distributed punctures, but along each side of middle smooth and with very minute punctures only. Elytra with feebly projecting shoulders;

very densely and coarsely punctate; striation and interstices very ill-defined. Length 13—17 (female 12½—15) mm.

Hab.—Tasmania: Zeehan (K. Findlay), Strahan (Aug. Simson), Magnet (O. L. Adams), Waratah (A. M. Lea).

Westwood's figure of *crenatus* will give a good general idea of this species, but the tips of mandibles, middle of prothorax, and mentum, etc., are different. The smaller specimens in some respects are close to the description of *forcipula*, but the head is convex, and Westwood's remark, "the anterior portion forming a large semi-circular depressed space, extending from the outer angles of the base of the mandibles nearly to the hind margin of the head," does not apply to one of the 65 males before me. *Forcipula* also is a considerably and consistently smaller species, with different punctures and clothing, and so far as I am aware only occurs about Hobart, whilst this species is only known from the west. At first sight it is very close to *rudis*, but the mandibles are less robust, and when seen from the sides appear tricuspidate, instead of bicuspidate, this being consistently the case in all the numerous specimens of both species before me, except in a few with much smaller mandibles than usual. Compare figures 34 and 35 (*rudis*) with 39 and 40 (*punctatus*).

On an occasional specimen there are a few hairs or setæ on the elytra, in addition to those on the sides. The mandibles when viewed from the sides appear to have two more or less conjoined tubercles on the upper surface, and these vary considerably in elevation and in size; there is usually also a swelling below them, so that the lower surface appears to be tricuspidate. Most males have the mandibles strongly curved and rather long, but on some small specimens they are shorter and stouter, so that when clenched the space they enclose is very much smaller in proportion than on the larger specimens. These small specimens also usually have the cephalic punctures considerably denser. The front tibiæ usually have five or six strong teeth, with usually smaller ones inserted between them (except between the first and second); but they are often different on the different sides of an individual.

The female is scarcely distinguishable from the female of *rudis*, and it differs from its male as does the female of that species.

LISSOTES CORNUTUS, Boileau. (Figs. 47, 48.)

Male, Black, feebly shining; sides setose, the elytra less conspicuously than usual, but in addition nearly every puncture has a short stout seta.

Head very wide, sides behind and in front of eyes feebly or not at all projecting, near each side and close behind the mandible a slight swelling (scarcely a tubercle), with a conspicuous medio-frontal subconical tubercle; towards sides with large, round, dense punctures, becoming smaller and sparser elsewhere; a narrow apical space highly polished and impunctate. Labrum acutely produced in middle. Mandibles strongly curved and rather thin, each strongly and obtusely produced close to labrum, upper surface obtusely tuberculate at middle of base (sometimes very feebly so), and close to apex with a strong projection directed upwards, or upwards and backwards; lower surface usually with a moderately strong cusp close to apex, and one or two very feeble ones behind same. Prothorax distinctly wider than head, sides finely serrated and scarcely rounded, near base somewhat oblique, with the hind angles widely rounded, apex gently rounded in middle, flattened along middle; with dense, rather coarse, and somewhat irregularly distributed punctures, but apical half with an impunctate or almost impunctate space along each side of middle, and conjoined in front. Elytra with shoulders scarcely at all projecting; with very dense but irregularly distributed punctures of moderate size, quite absent from the suture, which is highly polished; striation and interstices very ill-defined. Length, 14—18 (female 12—16) mm.

Female differs from the male in having the head much smaller, with denser punctures of more even size and distribution, the medio-frontal tubercle rather less, and the sublateral swellings rather more, conspicuous; mandibles of the usual female type, prothorax no wider than the elytra, its sides more rounded and with stronger serrations, smooth spaces much less defined, and elytra rather more coarsely and evenly punctured.

Hab.—Tasmania: Stanley, Zeehan (Aug. Simson), Zeehan (K. Findlay), Magnet (O. L. Adams), Waratah (A. M. Lea). (1)

In general appearance close to *rudis* and *punctatus*, but readily distinguished from those, and in fact from all species of the genus, by the conspicuous medio-frontal tubercle, in front of which is a narrow highly polished and impunctate space, extending almost the entire width of the apex; the suture is smoother than in other species of the genus, and the elytra are usually feebly alternately striped with black and dark brown, but the stripes are not always traceable.

The setose clothing of the elytra is shorter and stouter than usual, so that in fact many of the setæ might quite fairly be regarded as scales; they are usually more noticeable towards the sides and apex, but that is probably because those parts are less subject to abrasion. The front tibiæ usually have five or six strong teeth, with a few smaller ones. The female in general appearance is much like that of the preceding species, but may be readily distinguished by its suture, which is much as in the male, and by its medio-frontal tubercle.

LISSOTES LATICOLLIS, n. sp. (Figs. 49, 50, 51).

Male, Black, shining; sides feebly setose.

Head wide, base rather strongly convex, front strongly sloped and widely but rather shallowly concave, towards each side at about one-fourth from the apex with a strong and somewhat conical tubercle; sides behind eyes somewhat swollen, but not conspicuously projecting, in front of eyes feebly incurved to near apex, with moderately large and fairly dense punctures close to eyes, but elsewhere much smaller, sparser, and irregularly distributed. Labrum wide, obtusely notched in middle. Mandibles moderately stout, each at base wide and concave inwardly, swollen near labrum, apex with a small but acute notch, upper surface near apex with a strong upward projection. Prothorax larger than usual,

(1) Recorded by Boileau as from Australia, but probably confined to the north-west and west parts of Tasmania.

distinctly wider than head, sides almost smooth and more rounded than usual, hind angles widely rounded, apex almost truncate across middle, with the outer angles very feebly produced, middle not at all or very feebly impressed along middle; punctures fairly large at base and sides, but elsewhere small and sparse. Elytra less parallel-sided than usual, shoulders not projecting laterally; with moderately dense but rather small punctures, very sparse along suture; striation and interstices rather feebly defined. Length, 16—19 (female 14—16½) mm.

Female differs from the male in having the head much smaller, with coarser and more evenly distributed punctures, tubercles represented by slight swellings, mandibles of the usual female type; prothorax smaller and no wider than elytra at their widest, sides more evenly rounded and with somewhat stronger punctures.

Hab.—Tasmania: Zeehan (Aug. Simson and K. Findlay).

A large strongly convex species, with wide prothorax, and conspicuously bituberculate head, and usually with the labrum feebly notched in the middle. The tubercles are very distinct on all the six males before me, but vary somewhat in size. Two specimens have the elytra indistinctly diluted with red. The elytra have numerous small oblique scratches, many of which start from punctures. To the naked eye from certain directions the striation and interstices are fairly distinct. There are usually five strong teeth on the front tibiae.

LISSOTES POLITUS, n.sp. (Figs. 52, 53.)

Male, Black, shining; sides feebly setose.

Head large, rather longer than usual, and with the frontal slope unusually long and feebly concave; sides behind eyes evenly rounded, but in front of same strongly projecting and then very strongly incurved; greater portion of surface smooth and with small punctures, but towards each side, from close to eye to where it joins with the lateral incurvature, abruptly vertical or slightly overhanging, the space so marked off with coarse sculpture. Labrum somewhat acutely produced in middle. Mandibles stout at base, strongly angular close to labrum,

then strongly curved to apex, where each is rather narrowly notched, with the apical projection rather longer than the other; near apex with a strong projection (almost as long as the portion of mandible in front of it) somewhat curved, and directed upwards and inwards. Prothorax slightly wider than head, sides smooth and parallel for most of their length, hind angles widely rounded, apex very feebly rounded in middle; sides and base with dense and rather coarse punctures, elsewhere with sparse and minute ones. Elytra with shoulders rounded off; with dense and comparatively small punctures; striation and interstices fairly distinct. Length, 17 mm.

Female unknown.

Hab.—Tasmania (F. A. Rodway).

A very distinct species, although somewhat resembling the preceding at first sight; but the mandibles are very different about the apex, the labrum is pointed in the middle, the head is without conspicuous tubercles above the eyes, and the sides in front of the eyes are largely scooped out, and with the disc marked off from the sides by abrupt and slightly overhanging walls. The head of the type, measured along its middle, is longer than its prothorax, and its punctures, except at the sides, where, however, they are very confused in parts, are very small. The upper tine of each mandible is much more conspicuous than on either the preceding or following species. The two front teeth of the front tibiae are of normal size, but the others are rather smaller than usual. The coarse punctures on the prothorax are all submarginal, but there are a few of moderate size about the middle slightly in advance of the base.

A smaller (15 mm.) specimen differs from the type in having the head considerably smaller, with the frontal slope and the punctures much more conspicuous, the mandibles stouter and shorter, with their sub-basal projections more obtuse, but the tips and the upper tines are the same, except that they are somewhat smaller; the prothorax is smaller, with the sides more rounded; the elytra have smaller punctures, and the front tibiae have more and stronger teeth..

The two males before me are without locality labels, and I thought they were possibly from the West Coast, but Dr. Rodway on being applied to wrote of them:—"I got your note re *Lissotes*, and am sorry that I cannot be sure as to the locality. It was obtained near Hobart, and I think probably from a ti-tree swamp beyond Kingston, where I often used to go for beetles. They are not from the West Coast; I am sure of that."

LISSOTES RODWAYI, n. sp. (Figs. 54, 55).

Male, Black, some parts dark reddish brown; moderately shining; sides fringed with rather long setæ, and a few scattered about on the posterior slope of the elytra.

Head large and moderately wide, rather strongly convex; sides moderately projecting both in front of and behind eyes, with a slight swelling near each side in front, but scarcely tuberculate; towards sides with dense, large, round punctures, smaller near base, and smaller and sparser and somewhat irregularly distributed elsewhere. Labrum feebly incurved to middle of apex, with a slight projection over the middle. Mandibles not very stout, except at base, where each is strongly produced at the side of the labrum, apex rather strongly notched, upper surface near apex with a strong projection directed upwards and inwards. Prothorax not much wider than head, and very little, if at all, wider than widest part of elytra; sides very feebly or not at all serrated, apical two-thirds almost parallel, thence oblique to base, with the hind angles widely rounded; apex gently rounded across middle, with a comparatively narrow and distinct median line; punctures for a narrow space dense and rather coarse along sides and base, about the same size but sparser along middle; elsewhere with rather small but fairly dense punctures. Elytra not quite parallel-sided, shoulders rounded, with moderately dense but rather small punctures, becoming denser at the sides and posteriorly; striation and interstices rather ill-defined. Length, $16\frac{1}{2}$ —17 (female 15) mm.

Female differs from the male in having the head much smaller, less convex, with denser and mostly coarser punctures, the sides scarcely projecting either in front of or behind eyes; mandible of the usual female-

type; prothorax less transverse, sides more evenly rounded and more noticeably serrated, and with somewhat coarser punctures, whilst on the elytra they are somewhat finer.

Hab.—Tasmania (F. A. Rodway).

In some respects close to the description and figure of *crenatus*, but considerably larger (this, however, may be of no importance) and each mandible with three plain cusps or tines at apex, front of head almost vertical instead of concave, mentum with corners scarcely rounded off (certainly not "fere semicircularare") and apex of prothorax not truncate (as figured and described). In some respects it resembles the two preceding species, but the head is not conspicuously bituberculate, and the sides are not largely scooped out in front of the eyes.

On three specimens (two males and one female) the prothorax is of a dark reddish brown, and both males have the greater portion of the head somewhat darker but not black; these also have parts of the under surface more or less feebly diluted with red. All three have parts of the legs, and especially the coxæ, also diluted with red. There are two very strong teeth on the front tibiæ, and from three to five others of small or moderate size.

A male from Zeehan in Mr. Simson's collection differs from the types in being entirely black, the head somewhat concave in front, basal projection of the mandibles much less conspicuous, prothorax distinctly wider than elytra, with its median depression wider and shallower, and elytra with rather coarse punctures. The strong teeth on its front tibiæ are six on the right, following each other regularly, and five on the left, with two smaller ones between the third and fourth, and again between the fourth and fifth.

LISSOTES PARVUS, n. sp. (Fig. 56).

Male, Black, somewhat shining; sides fringed with long setæ; elytra in addition with other clothing.

Head wide, moderately convex, with the front slightly concave; sides rounded behind eyes and slightly projecting in front of same; a feeble swelling, sometimes almost a tubercle, towards each side behind the mandible; with

rather dense punctures of moderate size, but becoming larger and denser towards sides. Labrum rather feebly produced in middle. Mandibles short and stout, each near base with a subconical projection, then notched, and then feebly undulated or cuspidate to near apex, where there is a feeble notch. Prothorax decidedly wider than head, but very little, or not at all, wider than elytra; sides finely serrated, and towards base feebly incurved, apex very feebly rounded across middle; sides and base with dense and coarse punctures, elsewhere fairly dense but smaller, and smallest about apex. Elytra parallel-sided for most of their length; shoulders slightly projecting; with dense and rather coarse punctures; striation and interstices rather ill-defined. Length, 10—11 (female 9—10½) mm.

Female differs from the male in having the head much smaller, with coarser and somewhat denser punctures, mandibles of the usual female type, the prothorax less transverse, with sides more rounded, and punctures somewhat coarser.

Hab.—Tasmania (Aug. Simson), Hobart (A. M. Lea).

A very small species, in size and, except for the mandibles, general appearance, strongly resembling forcipula, but the mandibles very different from those of that species, or in fact of any other species of the genus, being unusually short and solid.

The clothing appears to be easily abraded, but one specimen in perfect condition has the elytra clothed with rows of long hairs, with short stout setæ, almost scales (as on cornutus) on the interstices, and similar stout setæ are on the sides of its prothorax. But most of the specimens have the long hairs and stout setæ entirely abraded, or greatly reduced in numbers, with the marginal setæ also reduced in numbers. An occasional specimen has most of the derm more or less noticeably diluted with red. The inner edge of each mandible between a rather deep notch in front of the sub-basal projection and a very feeble subapical notch, is sometimes almost straight, but it usually has two or three feeble cusps. There is usually a feeble tubercle on each mandible about its middle, and fairly close to the inner face, but it is not visible from the sides. There are usually five, but sometimes only four, strong teeth on the front tibæ.

EXPLANATION OF PLATES VIII. AND IX.

Figs. 1*, 2, 3, 4—*Lissotes curvicornis*, Boi. Heads and front tibia.

Figs. 5, 6, 7, 8—*Lissotes curvicornis*, Boi, var. *subtuberculatus*, Westw. Heads.

Figs. 9, 10, 11—*Lissotes curvicornis*, Boi, var. three. Heads.

Fig. 12—*Lissotes latidens*, Westw. Head.

Figs. 13, 14, 15—*Lissotes obtusatus*, Westw. Heads and front tibiæ.

Figs. 16, 17, 18, 19, 20, 21, 22—*Lissotes Launcestoni*, Westw. Heads and front tibia.

Figs. 23, 24, 25, 26—*Lissotes menalcas*, Westw. Heads, front tibiæ and upper lips.

Figs. 27, 28, 29, 30—*Lissotes forcipula*, Westw. Heads and front tibiæ.

Fig. 31—*Lissotes forcipula*, Westw. Head.

Figs. 32, 33—*Lissotes furcicornis*, Westw. Heads.

Figs. 34, 35, 36, 37—*Lissotes rudis*, Lea. Heads and front tibiæ.

Fig. 38—*Lissotes convexus*, Lea. Head.

Figs. 39, 40, 41, 42†, 43, 44, 45, 46—*Lissotes punctatus*, Lea. Heads and front tibiæ.

Figs. 47, 48—*Lissotes cornutus*, Boileau. Heads.

Figs. 49, 50, 51—*Lissotes laticollis*, Lea. Head, front tibiæ and projecting portions of mandibles.

Figs. 52, 53—*Lissotes politus*, Lea. Heads and front tibiæ.

Figs. 54, 55—*Lissotes Rodwayi*, Lea. Head and projecting portion of mandible of another specimen.

Fig. 56—*Lissotes parvus*, Lea. Head and front tibiæ.

Fig. 57—*Lissotes obtusatus*, Westw. Head.

Fig. 58—*Lissotes rudis*, Lea. Head removed from prothorax.

*The inset figure is the projecting portion of mandible, as viewed from the side.

† An hermaphrodite specimen.



